We Claim:

1. A method for assigning codes in a CDMA wireless communication system in which a plurality of wireless terminals communicate via a plurality of channels, said method comprising the steps of:

determining characteristics of said plurality of channels; and

assigning codes to said plurality of wireless terminals based on said characteristics of said channels.

2. The method of claim 1 wherein said step of assigning codes comprises the steps of:

choosing a target wireless terminal; and

assigning a code to said target wireless terminal.

3. The method of claim 2 wherein step of assigning a code to a target wireless terminal comprises the step of:

performing a random code search to obtain an improved code for said target wireless terminal which is an improvement over a current code of said target wireless terminal.

4. The method of claim 3 wherein said step of performing a random code search comprises the step of randomly searching available codes until an improved code is found.

5. The method of claim 3 wherein said step of performing a random code search comprises the step of randomly searching a subset of available codes for the best code in said subset.

6. The method of claim 3 further comprising the step of:

performing a gradient search of codes in the signal space area surrounding said improved code.

7. The method of claim 3 further comprising the step of:
performing a gradient search of transmission delays for said improved code.

8. The method of claim 3 further comprising the steps of:
performing a gradient search of codes in the signal space area surrounding said improved code; and
performing a gradient search of transmission delays for said improved code.

9. The method of claim 1 further comprising the steps of:
maintaining a processing set of said plurality of wireless terminals;
individually assigning codes to said wireless terminals in said processing set; and
adding a wireless terminal to said processing set when said step of individually assigning codes to said wireless terminals in said processing set has converged and repeating said step of individually assigning codes.

10. The method of claim 1 further comprising the step of:
transmitting said codes to said plurality of wireless terminals.

11. A method for assigning a code to a wireless terminal in a CDMA wireless communication system comprising the steps of:
determining characteristics of a communication channel of said wireless terminal; and
assigning a code to said wireless terminal based on said characteristics of said communication channel.

12. The method of claim 11 wherein said step of assigning a code further comprises the step of:

performing a random code search for an improved code relative to a current code assigned to said wireless terminal.

13. The method of claim 12 wherein said step of performing a random code search comprises the step of:

searching available codes for an improved code.

14. The method of claim 12 wherein said step of performing a random code search comprises the step of:

searching a subset of available codes for the best code in said subset.

15. The method of claim 12 further comprising the step of:

performing a gradient search of codes in the signal space area surrounding said improved code.

16. The method of claim 12 further comprising the step of:

performing a gradient search of transmission delays for said improved code.

17. The method of claim 12 further comprising the steps of:

performing a gradient search of codes in the signal space area surrounding said improved code; and

performing a gradient search of transmission delays for said improved code.

18. A method for use in a CDMA wireless communication system comprising the steps of:

receiving channel characteristics of a plurality of wireless channels; and

assigning codes to a plurality of wireless terminals based on said received channel characteristics.

19. The method of claim 18 wherein said step of assigning codes comprises the steps of:

choosing a target wireless terminal; and

assigning a code to said target wireless terminal.

20. The method of claim 19 wherein step of assigning a code to a target wireless terminal comprises the step of:

performing a random code search to obtain an improved code for said target wireless terminal which is an improvement over a current code of said target wireless terminal.

21. The method of claim 20 wherein said step of performing a random code search comprises the step of randomly searching available codes until an improved code is found.

22. The method of claim 20 wherein said step of performing a random code search comprises the step of randomly searching a subset of available codes for the best code in said subset.

23. The method of claim 20 further comprising the step of:

performing a gradient search of codes in the signal space area surrounding said improved code.

24. The method of claim 20 further comprising the step of:

performing a gradient search of transmission delays for said improved code.

25. The method of claim 20 further comprising the steps of:

performing a gradient search of codes in the signal space area surrounding said improved code; and

performing a gradient search of transmission delays for said improved code.

26. The method of claim 18 further comprising the steps of:
maintaining a processing set of said plurality of wireless terminals;
individually assigning codes to said wireless terminals in said processing set; and
adding a wireless terminal to said processing set when said step of individually assigning codes to said wireless terminals in said processing set has converged and repeating said step of individually assigning codes.

27. The method of claim 18 further comprising the step of:
transmitting said codes to said plurality of wireless terminals.

28. Apparatus for communicating with a plurality of wireless terminals via a plurality of channels, said apparatus comprising:
a channel estimator for determining channel characteristics; and
a code optimizer for assigning codes to said plurality of wireless terminals based on said channel characteristics.

29. The apparatus of claim 28 wherein said code optimizer comprises:
a memory storing computer program instructions;
a processor for executing said stored computer program instructions;
said computer program instructions defining the steps of:
choosing a target wireless terminal; and
assigning a code to said target wireless terminal.

30. The apparatus of claim 29 wherein the computer program instructions defining the step of assigning a code to a target wireless terminal further define the step of:

performing a random code search to obtain an improved code for said target wireless terminal which is an improvement over a current code of said target wireless terminal.

31. The apparatus of claim 30 wherein said computer program instructions defining the step of performing a random code search further define the step of randomly searching available codes until an improved code is found.

32. The apparatus of claim 30 wherein said computer program instructions defining the step of performing a random code search further define the step of randomly searching a subset of available codes for the best code in said subset.

33. The apparatus of claim 30 wherein said computer program instructions further define the step of:

performing a gradient search of codes in the signal space area surrounding said improved code.

34. The apparatus of claim 30 wherein said computer program instructions further define the step of:

performing a gradient search of transmission delays for said improved code.

35. The apparatus of claim 30 wherein said computer program instructions further define the steps of:

performing a gradient search of codes in the signal space area surrounding said improved code; and

performing a gradient search of transmission delays for said improved code.

36. The apparatus of claim 28 wherein said computer program instructions further define the steps of:

maintaining a processing set of said plurality of wireless terminals;

individually assigning codes to said wireless terminals in said processing set; and

adding one of said plurality of wireless terminals to said processing set when said step of individually assigning codes to said wireless terminals in said processing set has converged and repeating said step of individually assigning codes.

37. The apparatus of claim 28 wherein said computer program instructions further define the step of:

transmitting said codes to said plurality of wireless terminals.

38. Apparatus for communicating with a plurality of wireless terminals via a plurality of channels, said apparatus comprising:

means for determining channel characteristics; and

means for assigning codes to said plurality of wireless terminals based on said channel characteristics.

39. The apparatus of claim 38 wherein said means for assigning codes comprises:

means for choosing a target wireless terminal; and

means for assigning a code to said target wireless terminal.

40. The apparatus of claim 39 wherein said means for assigning a code to a target wireless terminal comprises:

means for performing a random code search to obtain an improved code for said target wireless terminal which is an improvement over a current code of said target wireless terminal.

41. The apparatus of claim 40 wherein said means for performing a random code search comprises means for randomly searching available codes until an improved code is found.

42. The apparatus of claim 40 wherein said means for performing a random code search comprises means for randomly searching a subset of available codes for the best code in said subset.

43. The apparatus of claim 40 further comprising:

means for performing a gradient search of codes in the signal space area surrounding said improved code.

44. The apparatus of claim 40 further comprising:

means for performing a gradient search of transmission delays for said improved code.

45. The apparatus of claim 40 further comprising:

means for performing a gradient search of codes in the signal space area surrounding said improved code; and

means for performing a gradient search of transmission delays for said improved code.

46. The apparatus of claim 38 further comprising:

means for maintaining a processing set of said plurality of wireless terminals;

means for individually assigning codes to said wireless terminals in said processing set;

means for adding one of said plurality of wireless terminals to said processing set when said step of individually assigning codes to said wireless terminals in said processing set has converged and repeating said step of individually assigning codes.

47. The apparatus of claim 38 further comprising:

means for transmitting said codes to said plurality of wireless terminals.